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Sanborn, Head & Associates

Consulting Engineers & Scientists

ADDITIONAL ENVIRONMENTAL SERVICES GROUNDWATER/SURFACE WATER SAMPLING AND ANALYSIS

**Beede Waste Oil/Cash Energy Site
Plaistow, New Hampshire**

Prepared for
**New Hampshire Department
of Environmental Services**

Prepared by
Sanborn, Head & Associates, Inc.

File 1143.3
December 1996

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Sanborn, Head & Associates

Consulting Engineers & Scientists

December 30, 1996

File No. 1143.3

Paul M. Currier, P.E.
Civil Engineer
Waste Management Division
New Hampshire Department of Environmental Services
P.O. Box 95, 6 Hazen Drive
Concord, NH 03302-0095

Re: Additional Environmental Services
Groundwater/Surface Water Sampling and Analysis
Beede Waste Oil/Cash Energy Site
Plaistow, New Hampshire

Dear Mr. Currier:

This report presents the results of water quality monitoring activities completed by Sanborn, Head & Associates, Inc. (SHA) at the Beede Waste Oil/Cash Energy site (Site) in Plaistow, New Hampshire, on behalf of the New Hampshire Department of Environmental Services (NHDES). These activities were completed pursuant to the workplan entitled "Cost Proposal And Workplan For Additional Environmental Services" prepared by SHA and dated July 15, 1996, and Amendment No. 3 of our Agreement with the NHDES executed by the Governor and Council on July 31, 1996. This report summarizes the activities and findings of the second of three proposed rounds of water quality sampling and analysis completed under the above-referenced contract.

WORK COMPLETED

SHA completed the sampling of groundwater and surface water between November 4 and 6, 1996. A site plan is provided as Figure 1. Groundwater and surface water collection, sample handling and preservation, field screening for pH and specific conductance, and quality assurance/quality control procedures were completed in general accordance with Section 3.5.2 of the Project Operations Plan prepared by SHA and dated May 1995. Quality control samples, including three blind duplicates and

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one trip blank, were submitted to Eastern Analytical Inc. (EAI) of Concord, New Hampshire for volatile organic compound (VOC) analysis using EPA Method 8260.

Groundwater and product (where present) levels were gauged in 40 wells, consisting of 37 on-site monitoring wells (including the two wells installed by Roy F. Weston, Inc. [RFW-1 and RFW-2]), the on-site dug well, and two abandoned off-site private water supply wells (Howard Manor Condominium and Howard Residence overburden wells). Monitoring well AE-16 could not be accessed due to erosion and instability of the embankment on which the well is located. Groundwater samples were collected from 25 wells including 22 on-site monitoring wells, the on-site dug well, and the Howard Manor Condominium and Howard Residence overburden wells. Pursuant to the workplan, no samples were collected from the nine on-site monitoring wells, namely SH-5, SH-6, SH-7, SH-10, AE-3, AE-4, AE-8, AE-9, and AE-11S, observed to contain product thicknesses exceeding 0.01 feet, or from the six monitoring wells, namely SH-4D, AE-10, AE-20, AE-21, AE-22, and MW-4, considered upgradient of suspected contaminant source areas and which historically have yielded groundwater samples with no detected VOCs. Groundwater samples were submitted to EAI for VOC analysis using EPA Method 8260.

Surface water levels were recorded at six established sampling locations along Kelley Brook (SW-2, SW-3, SW-4, SW-5, SW-7, and SW-8). Due to the absence of the reference (grade) stake at SW-1 located on Kelley Brook upstream of the Site, and at SW-6 located along an unnamed tributary which discharges into Kelley Brook, surface water elevations were not measured at these locations. Surface water samples were collected at six established sampling locations (SW-1, SW-2, SW-4, SW-5, SW-7, and SW-8) along Kelley Brook and submitted to EAI for VOC analysis using EPA Method 8260.

FINDINGS

Groundwater/Product Levels

Groundwater levels observed in November 1996 were compared to those observed in June and December 1995, and April and August 1996. The average site-wide groundwater level for November 1996 is between 0.6 and 1.8 feet higher than the levels recorded during the previous monitoring rounds, with a range of standard deviations for this time period of approximately 0.3 to 0.6 feet. Based on a review of historical water level data for the Site, groundwater levels have typically exhibited a seasonal trend with lower water levels in the summer months and higher water levels in the winter and early spring. The November 1996 groundwater levels appear to be unusually high for this time of year and likely the result of the heavy precipitation which occurred during the 2 to 3 weeks before the sampling round.

The November 1996 surface water levels are relatively consistent with the historical seasonal trends observed at the Site, with average surface water levels higher by approximately 0.4 feet and 0.6 feet than in August 1996 and June 1995, respectively, and within 0.1 feet of levels observed in April 1996. Surface water levels were not recorded in December 1995 due to the presence of ice along the majority of Kelley Brook. Typically, the same amount of recharge to groundwater and surface water will have a smaller effect on the surface water levels due to the surface water body's greater capacity for water storage relative to the aquifer. Groundwater and surface water elevation data are summarized in Tables 1 and 2, respectively, and on the field forms in Appendix A.

Based on the typically uniform difference between site-wide groundwater levels recorded in June 1995 and November 1996, the current groundwater flow directions for the site are expected to be generally similar to those interpreted for the June 1995 groundwater level data. However, the construction and interpretation of a groundwater contour map using the November 1996 data, which is beyond the scope of this work, would be needed to more accurately assess groundwater flow directions at this time. Based on the June 13, 1995 groundwater elevations, the direction of shallow groundwater flow (i.e., near the water table) beneath Parcel 1 ranges from east to northeast and exhibits a slight convergence toward the center of the site. On Parcel 2, the shallow groundwater flow directions are toward Kelley Brook and hence exhibit a divergence of flow ranging from northeast to north in the north, to southeast in the east and off-site to the south. Horizontal groundwater flow directions interpreted from wells screened in the lower fine sand and till units are generally similar to those at the water table. This condition indicates a relatively high degree of hydraulic communication throughout the overburden aquifer.

Apparent product thicknesses observed in November 1996 range from a petroleum sheen (i.e. less than 0.01 foot thickness) observed on groundwater collected from monitoring wells AE-2, AE-5, RFW-1, and SH-12 to approximately 1.42 feet measured in well AE-11S. As noted above, well AE-16 which has consistently exhibited free product in past monitoring rounds, was inaccessible at the time of the November 1996 sampling. The average apparent product thickness recorded in the on-site monitoring wells is less than the average thicknesses recorded in June and December 1995, and April and August 1996 by, respectively, 1.3, 1.1, 0.6, and 1.1 feet.

The observed decline in average apparent product thickness relative to previous monitoring rounds is in large part attributed to the high groundwater levels. Higher groundwater levels typically result in a decrease in the average apparent product thickness due to an increase in the volume of product trapped as residual oil in pore spaces below the water table. Lower groundwater levels may result in an increase in the volume of free oil as product previously trapped as residual oil below the water table is released. An exception is the free oil thickness observed in monitoring well AE-4 where, prior to November 1996, a measureable thickness had not been detected since June 1995.

Water Quality Results

Water quality results for the current sampling round were compared with those for June and December 1995, and April and August 1996. In general, the observed concentrations, spatial distribution, and types of VOCs detected in groundwater and surface water are consistent with results from the previous water quality monitoring rounds and do not indicate the discovery of additional contamination sources. In the current sampling round several VOCs, namely benzene, 1,1-dichloroethane, 1,2-dichloroethane, cis-1,2-dichloroethene, naphthalene, tetrachloroethene, trichloroethene and vinyl chloride, have been detected at concentrations at or exceeding NHDES ambient groundwater quality standards (AGQS) in groundwater from one or more monitoring wells located at the site. These findings are consistent with the hydrogeologic/contaminant transport model developed and presented by SHA in the September 1995 Site and Waste Characterization Report. The analytical results from the June and December 1995, and April, August, and November 1996 monitoring rounds are presented in Tables 3 and 4, and discussed below.

Little or no significant change or trend in the concentrations of VOCs was observed in samples collected from 20 monitoring wells and the on-site dug well.

- VOCs have not been detected in groundwater samples collected from three monitoring wells (SH-1D, SH-11, and AE-17S).
- Groundwater samples collected from monitoring wells SH-2S, SH-2D, SH-3S, SH-3D, and SH-12, have generally exhibited low to no detected concentrations of VOCs with no apparently significant trend in concentration with time.
- Groundwater samples collected from monitoring wells SH-9 and AE-14, located near the eastern boundary of Parcel 1, and from well AE-18D located on Parcel 2, typically have had little or no detected non-chlorinated aromatic VOCs (AVOCs) and exhibited relatively consistent levels of chlorinated VOCs (CVOCs).
- Groundwater samples collected from monitoring wells AE-1, AE-2, RFW-1 and RFW-2, all located in the vicinity of SWRP No. 1, have generally exhibited no detected concentrations of CVOCs. Total concentrations of AVOCs have been relatively consistent in groundwater samples collected from AE-1, AE-2, and RFW-2 (no AVOCs detected), while those observed in groundwater from RFW-1 have fluctuated with no significant trend. The concentration of methyl tertiary butyl ether (MTBE) has generally decreased with time in groundwater collected from monitoring wells AE-1, RFW-1, and RFW-2, and was not detected in the current

sampling round or from RFW-1 in the last two rounds. The on-site detection of MTBE in groundwater has been limited to samples collected from the above wells.

- Total AVOC and CVOC concentrations have typically fluctuated in groundwater from monitoring wells SH-4S, SH-8, AE-11D, AE-12, AE-17D, and the on-site dug well, but do not appear to exhibit a significant trend with time.

A general decrease in AVOC and CVOC concentrations is observed in groundwater from one monitoring well.

- Groundwater samples collected from monitoring well AE-18S have exhibited a decrease in total AVOCs and total CVOCs from, respectively, highs of 0.54 mg/l and 2.8 mg/l detected in April 1996, to 0.06 mg/l and 0.82 mg/l in the recent monitoring round.

A general decrease in AVOC concentrations is observed in groundwater from one monitoring well.

- Groundwater samples collected from monitoring well AE-5 have exhibited a decrease in total AVOCs from 2.12 mg/l detected in June 1995, to 0.99 mg/l in the recent monitoring round. CVOC concentrations have fluctuated and do not appear to exhibit a significant trend during the same time period. Well AE-5 was not sampled in December 1995 or April 1996 due to the presence of measureable product.

The Howard Manor Condominium (HM) and Howard Residence (HR) overburden wells have been sampled by SHA since December 1995. Groundwater samples collected from the Howard Manor Condominium well have generally exhibited low to no detected concentrations of VOCs (one detection of cis-1,2-dichloroethene at 0.002 mg/l in April 1996). Groundwater samples collected from the Howard Residence well have exhibited generally consistent levels of several CVOCs; no AVOCs have been detected.

Surface water samples were collected at six established locations along Kelley Brook. Four of the locations, SW-1, SW-4, SW-5, and SW-8, have been sampled during each of the monitoring rounds since June 1995. Surface water sample location SW-7 was first sampled in December 1995, and location SW-2 could not be sampled in August 1996 due to the absence of surface water at the sampling location. Analytical data are compiled in Table 4 and the following observations are noted:

- VOCs were not detected in the samples collected from locations SW-1 and SW-5, representing little or no change from previous monitoring rounds. MTBE, detected in the sample collected

from location SW-5 in August 1996, was not detected in November 1996. No other VOCs have been detected in the water samples collected from location SW-5.

- AVOCs were not detected in the water sample collected from location SW-8, representing no change from previous monitoring rounds. Toluene was detected at a concentration of 0.002 mg/l in the sample collected from SW-7 during the current sampling round. No other AVOCs have been detected in samples from SW-7 in the previous monitoring rounds. CVOC concentrations detected in samples from these two locations have been relatively low to not detected, and have not exhibited an apparently significant trend.
- Water samples collected at location SW-2 have exhibited fluctuations in both total CVOC and AVOC concentrations with no significant trend. Water samples collected at location SW-4 have exhibited similar concentration fluctuations up to the recent round, when both elevated AVOCs and CVOCs were detected. The relatively elevated AVOC and CVOC concentrations detected in November 1996 may be in part attributed to the presence of a sheen, potentially indicative of free product, observed on the surface water prior to sampling.

CONCLUSIONS

The November 1996 sampling round is the most recent of five groundwater and surface water monitoring rounds completed at the Site by SHA since June 1995. To date, the findings indicate that, in general, there is no apparently significant trend in total VOC concentrations at the majority of the sample locations. With only five or fewer sampling rounds for each location, the cause(s) of the observed variations in VOC concentrations are difficult to discern, and may be related to seasonal factors such as aquifer recharge, groundwater levels, and/or other climatic influences, or potential longer term effects such as changes in contaminant source strength, plume geometry and/or plume migration. As additional rounds of water quality data are generated, a more quantitative analysis/review of the temporal changes in water and product levels and concurrent changes in contaminant types and concentrations at each location may be useful in identifying potential seasonal and/or long term trends in VOC concentrations in groundwater at the Site. Based on the results of water quality sampling to date, specific observations include:

- The November 1996 groundwater levels are on average the highest observed since monitoring was initiated in June 1995. Historically, groundwater and surface water levels generally have exhibited a seasonal trend, being on average lower in the summer months and higher during winter and early spring.

- Average apparent product thicknesses have fluctuated, exhibiting on average slightly greater thicknesses in June 1995 and August 1996 than in December 1995 and April 1996, and a significantly reduced thickness in November 1996. The variation in average apparent product thicknesses may in part be attributed to seasonal fluctuations in groundwater levels, and migration of free oil over time.
- Three of the monitoring wells sampled, (SH-1D, SH-11, and AE-17S), which previously yielded groundwater samples with no detected VOCs continued to do so.
- No apparently significant trend in total AVOC or CVOC concentrations has been observed in samples collected from 17 monitoring wells, the on-site dug well, or the Howard Manor Condominium and Howard Resident overburden wells.
- The concentration of MTBE has generally decreased with time in groundwater from three of these monitoring wells, namely AE-1, RFW-1, and RFW-2.
- A general decrease in AVOC and CVOC concentrations has been observed in groundwater from monitoring well AE-18S since April 1996.
- A general decrease in AVOC concentrations has been observed in groundwater from monitoring well AE-5.
- In the surface water samples in which VOCs have been detected, total AVOC and CVOC concentrations generally have fluctuated with no apparently significant trend. The relatively elevated AVOC and CVOC concentrations detected in the sample from SW-4 in November 1996 may be in part attributed to the presence of a sheen, potentially indicative of free product, observed on the surface water prior to sampling.
- As additional rounds of water quality data are generated, a more quantitative analysis/review of the temporal changes in water and product levels and concurrent changes in contaminant types and concentrations may be useful in identifying potential seasonal and/or long term trends in VOC concentrations in groundwater at the Site.

Please contact us with any questions or comments you may have regarding this report or any other aspect of our work on the project. We look forward to continuing to work with the NHDES on this project.

Very truly yours,
SANBORN, HEAD & ASSOCIATES, INC.

James Z. Taylor
Project Hydrogeologist

Charles A. Crocetti, Ph.D., P.G.
Principal

Paul M. Sanborn
President/Principal

JZT:jzt/las/kmd

Attachments: Tables 1, 2, 3, and 4
Figure 1
Appendices A and B

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TABLES

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	6/13/95			6/14/95		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00	17.62		109.75	17.60		109.77
SH - 2S	123.07	120.40	18.18		104.89			
SH - 2D	122.98	120.40	18.11		104.87			
SH - 3S	131.84	129.70	24.48		107.36			
SH - 3D	132.23	129.80	25.35		106.88			
SH - 4S	131.05	128.50	18.88		112.17			
SH - 4D	131.32	128.60	21.82		109.50			
SH - 5	130.60	130.90	24.99	5.09	110.09			
SH - 6	120.86	118.30	15.48	2.78	107.80			
SH - 7	134.01	131.20	24.07	1.39	111.15			
SH - 8	131.35	131.80	20.72		110.63			
SH - 9	132.83	130.00	24.88		107.95			
SH - 10	128.70	127.10	23.50	2.73	107.52			
SH - 11	121.45	119.10	15.49		105.96			
SH - 12	120.73	118.40	10.48		110.25	10.48		110.25
AE - 1	128.63	126.27	18.62		110.01	18.62		110.01
AE - 2	127.68	125.29	17.85		109.83	17.85		109.83
AE - 3	122.68	119.27	14.28	2.10	110.14			
AE - 4	133.84	131.40	23.30	0.21	110.71			
AE - 5	131.19	131.40	22.01		109.18			
AE - 8	134.21	131.30	25.49		108.72			
AE - 9	132.69	130.33	25.16	1.39	108.71			
AE - 10	132.55	129.50	18.98		113.57	18.99		113.56
AE - 11S	133.65	131.00	26.00	2.49	109.79			
AE - 11D	132.66	130.90	23.43		109.23			
AE - 12	132.90	130.66	20.79		112.11	20.78		112.12
AE - 14	131.88	129.42	24.21		107.67			
AE - 16	130.09	125.10	25.86	4.49	108.18			
AE - 17S	121.31	118.42	15.84		105.47			
AE - 17D	121.39	118.74	16.02		105.37			
AE - 18S	123.46	120.00	18.20		105.26			
AE - 18D	121.85	120.00	16.60		105.25			
AE - 20	130.89	127.73	17.04		113.85	17.03		113.86
AE - 21	132.24	132.24	20.98		111.26			
AE - 22	131.95	131.95	21.18		110.77			
MW - 4	125.54	123.40	13.40		112.14	13.42		112.12
RFW-1	133.49							
RFW-2	113.72							
on-site WS - 1 (BR)	132.99	131.26	26.43		106.56			
on-site WS - 2 (BR)*	131.26	130.31	25.50		105.76			
on-site Dug Well (DG-OB)	113.03	108.78	8.09		104.94			
Hill (DG-OB)*	118.50		8.45		110.05			
Emerson (DG-OB)*	116.40		8.50		107.90			
Rheume (DG-OB)*	118.10		13.30		104.80			
Carrington (DG-OB)	118.10		8.30		109.80			
Howard Manor (BR)*	108.40		12.00		96.40	7.32		101.08
Howard Manor (DR-OB)	108.60		5.13		103.47	5.14		103.46
Howard Residence (DR-OB)	116.50	114.70				11.84		104.66
Howard Residence (BR) *	115.70	114.90	21.40		94.30	14.08		101.62
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40					48.30		72.10
Elwell (BR)*	129.20		29.30		99.90			
Banaski (BR)*	130.20					28.10		102.10

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	6/15/95			6/16/95		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00						
SH - 2S	123.07	120.40	18.20		104.87			
SH - 2D	122.98	120.40	18.10		104.88			
SH - 3S	131.84	129.70	24.54		107.30			
SH - 3D	132.23	129.80	25.42		106.81			
SH - 4S	131.05	128.50				18.93		112.12
SH - 4D	131.32	128.60				21.86		109.46
SH - 5	130.60	130.90				25.31	5.38	110.02
SH - 6	120.86	118.30				15.38	2.66	107.79
SH - 7	134.01	131.20				24.04	1.29	111.09
SH - 8	131.35	131.80				20.75		110.60
SH - 9	132.83	130.00	24.88		107.95			
SH - 10	128.70	127.10				23.55	2.76	107.50
SH - 11	121.45	119.10	15.52		105.93			
SH - 12	120.73	118.40						
AE - 1	128.63	126.27						
AE - 2	127.68	125.29						
AE - 3	122.68	119.27						
AE - 4	133.84	131.40						
AE - 5	131.19	131.40						
AE - 8	134.21	131.30						
AE - 9	132.69	130.33						
AE - 10	132.55	129.50						
AE - 11S	133.65	131.00						
AE - 11D	132.66	130.90				23.33		109.33
AE - 12	132.90	130.66						
AE - 14	131.88	129.42				24.22		107.66
AE - 16	130.09	125.10						
AE - 17S	121.31	118.42	15.87		105.44			
AE - 17D	121.39	118.74	16.04		105.35			
AE - 18S	123.46	120.00	18.22		105.24			
AE - 18D	121.85	120.00	16.60		105.25			
AE - 20	130.89	127.73						
AE - 21	132.24	132.24				21.01		111.23
AE - 22	131.95	131.95				21.21		110.74
MW - 4	125.54	123.40						
RFW-1	133.49							
RFW-2	113.72							
on-site WS - 1 (BR)	132.99	131.26				25.96		107.03
on-site WS - 2 (BR)*	131.26	130.31						
on-site Dug Well (DG-OB)	113.03	108.78						
Hill (DG-OB)*	118.50							
Emerson (DG-OB)*	116.40							
Rheume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60							
Howard Residence (DR-OB)	116.50	114.70						
Howard Residence (BR) *	115.70	114.90						
Sawyer (DR-OB)*	107.30					3.84		103.46
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

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Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	6/19/95			6/20/95		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00						
SH - 2S	123.07	120.40						
SH - 2D	122.98	120.40						
SH - 3S	131.84	129.70						
SH - 3D	132.23	129.80						
SH - 4S	131.05	128.50						
SH - 4D	131.32	128.60						
SH - 5	130.60	130.90						
SH - 6	120.86	118.30						
SH - 7	134.01	131.20						
SH - 8	131.35	131.80						
SH - 9	132.83	130.00						
SH - 10	128.70	127.10						
SH - 11	121.45	119.10						
SH - 12	120.73	118.40						
AE - 1	128.63	126.27						
AE - 2	127.68	125.29						
AE - 3	122.68	119.27	14.28	2.01	110.07			
AE - 4	133.84	131.40	23.40	0.23	110.63	23.40	0.23	110.63
AE - 5	131.19	131.40	22.12		109.07	22.16		109.03
AE - 8	134.21	131.30	26.32	1.23	109.05			
AE - 9	132.69	130.33	25.27	1.42	108.63			
AE - 10	132.55	129.50						
AE - 11S	133.65	131.00	26.28	2.72	109.71			
AE - 11D	132.66	130.90						
AE - 12	132.90	130.66						
AE - 14	131.88	129.42						
AE - 16	130.09	125.10	25.95	4.48	108.08			
AE - 17S	121.31	118.42						
AE - 17D	121.39	118.74						
AE - 18S	123.46	120.00						
AE - 18D	121.85	120.00						
AE - 20	130.89	127.73						
AE - 21	132.24	132.24						
AE - 22	131.95	131.95						
MW - 4	125.54	123.40						
RFW-1	133.49							
RFW-2	113.72							
on-site WS - 1 (BR)	132.99	131.26						
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on-site Dug Well (DG-OB)	113.03	108.78						
Hill (DG-OB)*	118.50							
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Rheume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60							
Howard Residence (DR-OB)	116.50	114.70						
Howard Residence (BR) *	115.70	114.90						
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	8/9/95			12/13/95		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00				17.10		110.27
SH - 2S	123.07	120.40	18.38		104.69	17.74		105.33
SH - 2D	122.98	120.40	18.29		104.69	17.65		105.33
SH - 3S	131.84	129.70	25.14		106.70			
SH - 3D	132.23	129.80	25.99		106.24			
SH - 4S	131.05	128.50						
SH - 4D	131.32	128.60						
SH - 5	130.60	130.90						
SH - 6	120.86	118.30						
SH - 7	134.01	131.20						
SH - 8	131.35	131.80						
SH - 9	132.83	130.00						
SH - 10	128.70	127.10						
SH - 11	121.45	119.10						
SH - 12	120.73	118.40						
AE - 1	128.63	126.27						
AE - 2	127.68	125.29						
AE - 3	122.68	119.27						
AE - 4	133.84	131.40						
AE - 5	131.19	131.40						
AE - 8	134.21	131.30						
AE - 9	132.69	130.33						
AE - 10	132.55	129.50						
AE - 11S	133.65	131.00						
AE - 11D	132.66	130.90						
AE - 12	132.90	130.66						
AE - 14	131.88	129.42						
AE - 16	130.09	125.10						
AE - 17S	121.31	118.42						
AE - 17D	121.39	118.74						
AE - 18S	123.46	120.00						
AE - 18D	121.85	120.00						
AE - 20	130.89	127.73						
AE - 21	132.24	132.24						
AE - 22	131.95	131.95						
MW - 4	125.54	123.40						
RFW-1	133.49							
RFW-2	113.72							
on-site WS - 1 (BR)	132.99	131.26						
on-site WS - 2 (BR)*	131.26	130.31						
on-site Dug Well (DG-OB)	113.03	108.78						
Hill (DG-OB)*	118.50							
Emerson (DG-OB)*	116.40							
Rheume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60							
Howard Residence (DR-OB)	116.50	114.70	12.00		104.50			
Howard Residence (BR) *	115.70	114.90	13.27		102.43			
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	12/14/95			12/15/95		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00						
SH - 2S	123.07	120.40						
SH - 2D	122.98	120.40						
SH - 3S	131.84	129.70	24.15		107.69	24.10		107.74
SH - 3D	132.23	129.80	25.06		107.17			
SH - 4S	131.05	128.50	19.10		111.95	19.12		111.93
SH - 4D	131.32	128.60	21.62		109.70	21.63		109.69
SH - 5	130.60	130.90				22.91	3.16	110.47
SH - 6	120.86	118.30				15.84	3.58	108.13
SH - 7	134.01	131.20				23.43	0.99	111.44
SH - 8	131.35	131.80						
SH - 9	132.83	130.00				24.62		108.21
SH - 10	128.70	127.10				22.58	2.13	107.93
SH - 11	121.45	119.10				15.07		106.38
SH - 12	120.73	118.40						
AE - 1	128.63	126.27						
AE - 2	127.68	125.29						
AE - 3	122.68	119.27				13.43	1.59	110.57
AE - 4	133.84	131.40				22.75		111.09
AE - 5	131.19	131.40						
AE - 8	134.21	131.30				26.56	1.96	109.49
AE - 9	132.69	130.33				24.41	1.01	109.14
AE - 10	132.55	129.50						
AE - 11S	133.65	131.00				24.55	1.16	110.10
AE - 11D	132.66	130.90				23.06		109.60
AE - 12	132.90	130.66						
AE - 14	131.88	129.42				23.84		108.04
AE - 16	130.09	125.10				25.12	4.14	108.61
AE - 17S	121.31	118.42				15.40		105.91
AE - 17D	121.39	118.74				15.63		105.76
AE - 18S	123.46	120.00				17.78		105.68
AE - 18D	121.85	120.00				16.16		105.69
AE - 20	130.89	127.73						
AE - 21	132.24	132.24				20.65		111.59
AE - 22	131.95	131.95				20.80		111.15
MW - 4	125.54	123.40						
RFW-1	133.49							
RFW-2	113.72							
on-site WS - 1 (BR)	132.99	131.26						
on-site WS - 2 (BR)*	131.26	130.31						
on-site Dug Well (DG-OB)	113.03	108.78	7.69		105.34			
Hill (DG-OB)*	118.50							
Emerson (DG-OB)*	116.40							
Rheume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60							
Howard Residence (DR-OB)	116.50	114.70						
Howard Residence (BR) *	115.70	114.90						
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	12/18/95			12/21/95		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00						
SH - 2S	123.07	120.40						
SH - 2D	122.98	120.40						
SH - 3S	131.84	129.70						
SH - 3D	132.23	129.80						
SH - 4S	131.05	128.50	19.13		111.92			
SH - 4D	131.32	128.60	21.63		109.69			
SH - 5	130.60	130.90						
SH - 6	120.86	118.30						
SH - 7	134.01	131.20						
SH - 8	131.35	131.80	20.42		110.93			
SH - 9	132.83	130.00						
SH - 10	128.70	127.10						
SH - 11	121.45	119.10						
SH - 12	120.73	118.40	10.05		110.68			
AE - 1	128.63	126.27	18.37		110.26			
AE - 2	127.68	125.29	17.37		110.31			
AE - 3	122.68	119.27						
AE - 4	133.84	131.40	22.75		111.09			
AE - 5	131.19	131.40	21.60	0.18	109.75			
AE - 8	134.21	131.30						
AE - 9	132.69	130.33						
AE - 10	132.55	129.50	19.04		113.51			
AE - 11S	133.65	131.00						
AE - 11D	132.66	130.90						
AE - 12	132.90	130.66	20.89		112.01			
AE - 14	131.88	129.42						
AE - 16	130.09	125.10						
AE - 17S	121.31	118.42						
AE - 17D	121.39	118.74						
AE - 18S	123.46	120.00						
AE - 18D	121.85	120.00						
AE - 20	130.89	127.73	17.38		113.51			
AE - 21	132.24	132.24						
AE - 22	131.95	131.95						
MW - 4	125.54	123.40	13.54		112.00			
RFW-1	133.49					23.83		109.66
RFW-2	113.72					4.88		108.84
on-site WS - 1 (BR)	132.99	131.26						
on-site WS - 2 (BR)*	131.26	130.31						
on-site Dug Well (DG-OB)	113.03	108.78						
Hill (DG-OB)*	118.50							
Emerson (DG-OB)*	116.40							
Rheume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60		4.60		104.00			
Howard Residence (DR-OB)	116.50	114.70	11.59		104.91			
Howard Residence (BR) *	115.70	114.90						
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	4/2/96			4/3/96		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00				16.53		110.84
SH - 2S	123.07	120.40	17.35		105.72			
SH - 2D	122.98	120.40	17.24		105.74			
SH - 3S	131.84	129.70	23.13		108.71			
SH - 3D	132.23	129.80	24.23		108.00			
SH - 4S	131.05	128.50	17.40		113.65			
SH - 4D	131.32	128.60	20.54		110.78			
SH - 5	130.60	130.90				21.93	3.00	111.31
SH - 6	120.86	118.30				14.58	2.66	108.59
SH - 7	134.01	131.20				22.24	0.80	112.47
SH - 8	131.35	131.80				19.58		111.77
SH - 9	132.83	130.00	23.63		109.20			
SH - 10	128.70	127.10				21.42	1.45	108.51
SH - 11	121.45	119.10	14.36		107.09			
SH - 12	120.73	118.40				9.43		111.30
AE - 1	128.63	126.27				17.59		111.04
AE - 2	127.68	125.29				16.82		110.86
AE - 3	122.68	119.27				11.11	0.01	111.58
AE - 4	133.84	131.40				21.92		111.92
AE - 5	131.19	131.40				20.94	0.02	110.27
AE - 8	134.21	131.30				24.33	0.92	110.74
AE - 9	132.69	130.33				23.52	0.67	109.74
AE - 10	132.55	129.50	17.57		114.98			
AE - 11S	133.65	131.00				23.91	1.45	110.99
AE - 11D	132.66	130.90				22.37		110.29
AE - 12	132.90	130.66	19.30		113.60			
AE - 14	131.88	129.42				23.25		108.63
AE - 16	130.09	125.10				25.24	4.77	109.05
AE - 17S	121.31	118.42	14.82		106.49			
AE - 17D	121.39	118.74	15.04		106.35			
AE - 18S	123.46	120.00	17.31		106.15			
AE - 18D	121.85	120.00	15.70		106.15			
AE - 20	130.89	127.73	15.23		115.66			
AE - 21	132.24	132.24				19.79		112.45
AE - 22	131.95	131.95				20.03		111.92
MW - 4	125.54	123.40				12.46		113.08
RFW-1	133.49					23.21		110.28
RFW-2	113.72					4.44		109.28
on-site WS - 1 (BR)	132.99	131.26						
on-site WS - 2 (BR)*	131.26	130.31						
on-site Dug Well (DG-OB)	113.03	108.78	7.24		105.79			
Hill (DG-OB)*	118.50							
Emerson (DG-OB)*	116.40							
Rheume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60					4.32		104.28
Howard Residence (DR-OB)	116.50	114.70				11.04		105.46
Howard Residence (BR) *	115.70	114.90						
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	8/12/96			8/13/96		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00	17.75		109.62			
SH - 2S	123.07	120.40	17.97		105.10			
SH - 2D	122.98	120.40	17.86		105.12			
SH - 3S	131.84	129.70	24.32		107.52			
SH - 3D	132.23	129.80	25.26		106.97			
SH - 4S	131.05	128.50	18.56		112.49			
SH - 4D	131.32	128.60	21.75		109.57			
SH - 5	130.60	130.90				25.35	5.46	110.05
SH - 6	120.86	118.30				14.35	1.40	107.73
SH - 7	134.01	131.20				23.68	1.07	111.26
SH - 8	131.35	131.80				20.71		110.64
SH - 9	132.83	130.00	24.85		107.98			
SH - 10	128.70	127.10				23.17	2.27	107.46
SH - 11	121.45	119.10	15.41		106.04			
SH - 12	120.73	118.40				10.64		110.09
AE - 1	128.63	126.27				18.81		109.82
AE - 2	127.68	125.29				18.03		109.65
AE - 3	122.68	119.27				13.01	0.48	110.07
AE - 4	133.84	131.40				23.20		110.64
AE - 5	131.19	131.40				22.19	0.01	109.01
AE - 8	134.21	131.30				26.45	1.80	109.45
AE - 9	132.69	130.33				25.19	1.24	108.55
AE - 10	132.55	129.50	18.65		113.90			
AE - 11S	133.65	131.00				26.05	2.52	109.77
AE - 11D	132.66	130.90	23.50		109.16			
AE - 12	132.90	130.66	20.42		112.48			
AE - 14	131.88	129.42	24.26		107.62			
AE - 16	130.09	125.10				26.10	4.60	108.04
AE - 17S	121.31	118.42	15.73		105.58			
AE - 17D	121.39	118.74	15.88		105.51			
AE - 18S	123.46	120.00	17.96		105.50			
AE - 18D	121.85	120.00	16.36		105.49			
AE - 20	130.89	127.73	16.64		114.25			
AE - 21	132.24	132.24						
AE - 22	131.95	131.95				21.25		110.70
MW - 4	125.54	123.40				13.47		112.07
RFW-1	133.49					24.40		109.09
RFW-2	113.72					5.48		108.24
on-site WS - 1 (BR)	132.99	131.26						
on-site WS - 2 (BR)*	131.26	130.31						
on-site Dug Well (DG-OB)	113.03	108.78	7.78		105.25			
Hill (DG-OB)*	118.50							
Emerson (DG-OB)*	116.40							
Rheaume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60							
Howard Residence (DR-OB)	116.50	114.70						
Howard Residence (BR) *	115.70	114.90						
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	8/14/96			11/4/96		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00						
SH - 2S	123.07	120.40				17.43		105.64
SH - 2D	122.98	120.40				16.60		106.38
SH - 3S	131.84	129.70				22.13		109.71
SH - 3D	132.23	129.80				23.26		108.97
SH - 4S	131.05	128.50				16.56		114.49
SH - 4D	131.32	128.60				19.71		111.61
SH - 5	130.60	130.90						
SH - 6	120.86	118.30						
SH - 7	134.01	131.20						
SH - 8	131.35	131.80						
SH - 9	132.83	130.00				22.67		110.16
SH - 10	128.70	127.10						
SH - 11	121.45	119.10				13.45		108.00
SH - 12	120.73	118.40						
AE - 1	128.63	126.27				17.20		111.43
AE - 2	127.68	125.29				16.41		111.27
AE - 3	122.68	119.27						
AE - 4	133.84	131.40						
AE - 5	131.19	131.40						
AE - 8	134.21	131.30						
AE - 9	132.69	130.33						
AE - 10	132.55	129.50				16.65		115.90
AE - 11S	133.65	131.00						
AE - 11D	132.66	130.90				21.74		110.92
AE - 12	132.90	130.66				18.25		114.65
AE - 14	131.88	129.42						
AE - 16	130.09	125.10						
AE - 17S	121.31	118.42				13.90		107.41
AE - 17D	121.39	118.74				14.25		107.14
AE - 18S	123.46	120.00				16.68		106.78
AE - 18D	121.85	120.00				14.98		106.87
AE - 20	130.89	127.73				14.44		116.45
AE - 21	132.24	132.24	20.98		111.26			
AE - 22	131.95	131.95				19.25		112.70
MW - 4	125.54	123.40				14.77 **		110.77**
RFW-1	133.49							
RFW-2	113.72							
on-site WS - 1 (BR)	132.99	131.26						
on-site WS - 2 (BR)*	131.26	130.31						
on-site Dug Well (DG-OB)	113.03	108.78						
Hill (DG-OB)*	118.50							
Emerson (DG-OB)*	116.40							
Rheaume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60		4.71		103.89			
Howard Residence (DR-OB)	116.50	114.70	11.55		104.95			
Howard Residence (BR) *	115.70	114.90						
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Monitoring Well Location	Reference Elevation	Ground Surface Elevation	11/5/96			11/6/96		
			Depth to Water	Product Thickness	Equivalent Potentiometric Elevation	Depth to Water	Product Thickness	Equivalent Potentiometric Elevation
SH - 1D	127.37	125.00	16.12		111.25			
SH - 2S	123.07	120.40						
SH - 2D	122.98	120.40						
SH - 3S	131.84	129.70						
SH - 3D	132.23	129.80						
SH - 4S	131.05	128.50						
SH - 4D	131.32	128.60						
SH - 5	130.60	130.90				18.90	0.46	112.10
SH - 6	120.86	118.30				11.67	0.04	109.22
SH - 7	134.01	131.20				21.26	0.81	113.45
SH - 8	131.35	131.80	18.74		112.61			
SH - 9	132.83	130.00						
SH - 10	128.70	127.10				20.29	0.67	108.98
SH - 11	121.45	119.10						
SH - 12	120.73	118.40	8.91		111.82			
AE - 1	128.63	126.27						
AE - 2	127.68	125.29						
AE - 3	122.68	119.27	10.55	0.14	112.25			
AE - 4	133.84	131.40	21.32	0.10	112.60			
AE - 5	131.19	131.40	20.45		110.74			
AE - 8	134.21	131.30				23.85	0.64	110.96
AE - 9	132.69	130.33				23.09	0.63	110.14
AE - 10	132.55	129.50						
AE - 11S	133.65	131.00				23.14	1.42	111.73
AE - 11D	132.66	130.90						
AE - 12	132.90	130.66						
AE - 14	131.88	129.42	22.54		109.34			
AE - 16	130.09	125.10				-	-	-
AE - 17S	121.31	118.42						
AE - 17D	121.39	118.74						
AE - 18S	123.46	120.00						
AE - 18D	121.85	120.00						
AE - 20	130.89	127.73						
AE - 21	132.24	132.24	18.98		113.26			
AE - 22	131.95	131.95						
MW - 4	125.54	123.40						
RFW-1	133.49		22.86		110.63			
RFW-2	113.72		4.26		109.46			
on-site WS - 1 (BR)	132.99	131.26						
on-site WS - 2 (BR)*	131.26	130.31						
on-site Dug Well (DG-OB)	113.03	108.78	6.65		106.38			
Hill (DG-OB)*	118.50							
Emerson (DG-OB)*	116.40							
Rheaume (DG-OB)*	118.10							
Carrington (DG-OB)	118.10							
Howard Manor (BR)*	108.40							
Howard Manor (DR-OB)	108.60					4.15		104.45
Howard Residence (DR-OB)	116.50	114.70				10.56		105.94
Howard Residence (BR) *	115.70	114.90						
Sawyer (DR-OB)*	107.30							
Joray/Armstrong (BR)*	120.40							
Elwell (BR)*	129.20							
Banaski (BR)*	130.20							

TABLE 1
Summary of Groundwater Elevations and Product Thickness Measurements
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Notes:

1. Measurements are reported in feet.
2. Groundwater level and product thickness measurements were obtained by SHA on the dates indicated using an ORS Co. or Slope Indicator Co. oil/water interface probe or Slope Indicator Co. water level meter.
3. Reference point elevations were surveyed by Hayner/Swanson, Inc. (HSI) of Nashua, New Hampshire between June 16 and 20, 1995. Elevations are in feet relative to the USGS datum which is equivalent to mean sea level.
4. The top of the PVC well casing was used as the reference point for measurements at all wells except AE-17D where the top of the steel casing was used as a reference point.
5. "BR" indicates a bedrock water supply well.
 "DG-OB" indicates a dug overburden water supply well.
 "DR-OB" indicates a drilled or driven overburden water supply well.
6. Equivalent potentiometric elevations were calculated by multiplying the measured product thickness by a product specific gravity and subtracting this from the depth to groundwater. The following specific gravities were used for the corresponding monitoring wells based on specific gravity data determined from product samples collected at the site:

0.83 – AE-3, AE-4[†]
 0.85 – AE-9, SH-10
 0.86 – AE-11S
 0.87 – SH-6, SH-7
 0.88 – AE-16, SH-5
 0.90 – AE-5
 0.94 – AE-8

[†] The estimated specific gravity is based on that determined for AE-3 which exhibits a similar chemical fingerprint and visual characteristics.

7. "*" indicates wells actively used for water supply. Therefore, water levels may not represent static conditions.
8. "-" indicates well has been destroyed or is inaccessible.
9. Reference elevations for monitoring wells RFW-1 and RFW-2 were provided by Roy F. Weston (RFW) and adjusted by +0.26 feet to reflect the difference between SHA's and RFW's surveyed elevation of monitoring well SH-6.
10. "***" indicates the groundwater level may be in error based on a comparison with historical levels recorded for this location.

TABLE 2
Summary of Surface Water Elevations
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Date				6/13/95		6/20/95		6/21/95		4/2/96		4/3/96		8/14/96		11/5/96		11/6/96	
Surface Water Level	Reference Elevation	Local Benchmark	Stream Bed Elevation	Depth to Water	Surface Water Elevation	Depth to Water	Surface Water Elevation	Depth to Water	Surface Water Elevation	Depth to Water	Surface Water Elevation	Depth to Water	Surface Water Elevation	Depth to Water	Surface Water Elevation	Depth to Water	Surface Water Elevation	Depth to Water	Surface Water Elevation
SW - 1	112.20	113.42	108.95	2.80	109.40	2.88	109.32			2.15	110.05			---				---	
SW - 2	110.49	110.81	107.64	2.70	107.79	2.85	107.64			2.32	108.17			---				2.30	108.19
SW - 3	112.04	110.81	106.30	5.20	106.84	5.24	106.80					4.30	107.74	---				4.50	107.54
SW - 4	110.71	111.21	106.11	4.10	106.61	3.94	106.77			3.47	107.24			---				3.75	106.96
SW - 5	109.61	107.89	104.11	4.80	104.81	4.94	104.67			3.78	105.83			4.17	105.44			3.65	105.96
SW - 6	109.50	107.48	103.80	5.20	104.30			5.28	104.22			4.86	104.64	5.00	104.50			---	
SW - 7	107.88	114.76	104.03	3.70	104.18			3.63	104.25	3.20	104.68			3.04	104.84	2.95	104.93	2.95	104.93
SW - 8	106.28	106.28	100.53	4.40	101.88			4.53	101.75			3.92	102.36	4.50	101.78			3.98	102.30

Notes:

1. Elevations and depths are reported in feet.
2. Surface water measurements were obtained by SHA on the dates indicated using a Slope Indicator Co. water level meter, tape, or ruler.
3. Reference point elevations were surveyed by Hayner/Swanson, Inc. (HSI) of Nashua, New Hampshire between June 16 and 20, 1995. Elevations are in feet relative to the USGS datum which is equivalent to mean sea level.
4. The top of a wooden grade stake was used as the reference point for measurements at all locations except SW-8. A metal plaque cemented into a bridge crossing Kelley Brook was used as the reference point for SW-8.
5. "---" indicates measurement not recorded due to absence of reference point or no surface water present at reference point location.

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		SH-1D					SH-1D DUP (OW-1)	SH-2S					SH-2D				
VOC Dilution Factor		1					1	1					1				
Date of Sample		6/14/95	12/13/95	4/3/96	8/12/96	11/5/96	8/12/96	6/15/95	12/13/95	4/2/96	8/12/96	11/4/96	6/15/95	12/13/95	4/2/96	8/12/96	11/4/96
Compounds	AGQS																
Benzene	0.005 (MCL)																
n-Butylbenzene	NA																
sec-Butylbenzene	NA																
Ethylbenzene	0.70 (MCL)																
Isopropylbenzene	NA																
p-Isopropyltoluene	NA																
Naphthalene	0.020 (LHA)																
n-Propylbenzene	NA																
Toluene	1.0 (MCL)														0.007		
1,2,4-Trimethylbenzene	NA																
1,3,5-Trimethylbenzene	NA																
o-Xylene	10.0* (MCL)																
m,p-Xylene	10.0* (MCL)																
MTBE	0.10 (BHRA)																
Total Non-Chlorinated Aromatic VOCs + MTBE	NA														0.007		
Chloroethane	NA																
Chloroform	0.006** (EPA 10-6)																
1,2-Dichlorobenzene	0.60 (MCL)																
1,4-Dichlorobenzene	0.075 (MCL)																
1,1-Dichloroethane	0.081 (BHRA)																
1,2-Dichloroethane	0.005 (MCL)																
1,1-Dichloroethene	0.007 (MCL)																
cis-1,2-Dichloroethene	0.070 (MCL)										0.002						
trans-1,2-Dichloroethene	0.10 (MCL)																
Tetrachloroethene	0.005 (MCL)										0.002						
1,1,1-Trichloroethane	0.20 (MCL)										0.002						
Trichloroethene	0.005 (MCL)																
Vinyl Chloride	0.002 (MCL)																
Total Chlorinated VOCs	NA										0.006						
Acetone	0.70 (BHRA)																
2-Butanone (MEK)	0.17 (LHA)																
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)																

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		SH-3S					SH-3D					SH-4S					SH-4D			SH-5
VOC Dilution Factor		1					1					1					1			10
Date of Sample		6/15/95	12/14/95	4/3/96	8/12/96	11/4/96	6/15/95	12/14/95	4/2/96	8/12/96	11/4/96	6/16/95	12/14/95	4/2/96	8/12/96	11/4/96	6/16/95	12/14/95	4/2/96	6/19/95
Compounds	AGQS																			
Benzene	0.005 (MCL)											0.002								0.14
n-Butylbenzene	NA																			
sec-Butylbenzene	NA																			
Ethylbenzene	0.70 (MCL)											0.003								0.07
Isopropylbenzene	NA																			
p-Isopropyltoluene	NA																			
Naphthalene	0.020 (LHA)											0.002			0.003					0.03
n-Propylbenzene	NA											0.001								0.02
Toluene	1.0 (MCL)						0.005													0.99
1,2,4-Trimethylbenzene	NA											0.008			0.002					0.10
1,3,5-Trimethylbenzene	NA																			0.04
o-Xylene	10.0* (MCL)																			0.12
m,p-Xylene	10.0* (MCL)											0.002								0.14
MTBE	0.10 (BHRA)																			
Total Non-Chlorinated Aromatic VOCs + MTBE	NA						0.005					0.018			0.005					1.65
Chloroethane	NA																			
Chloroform	0.006** (EPA 10-6)																			
1,2-Dichlorobenzene	0.60 (MCL)																			
1,4-Dichlorobenzene	0.075 (MCL)																			
1,1-Dichloroethane	0.081 (BHRA)	0.002	0.004									0.012			0.003					0.04
1,2-Dichloroethane	0.005 (MCL)																			0.02
1,1-Dichloroethene	0.007 (MCL)																			0.03
cis-1,2-Dichloroethene	0.070 (MCL)								0.002	0.002		0.015								2.1
trans-1,2-Dichloroethene	0.10 (MCL)																			
Tetrachloroethene	0.005 (MCL)	0.002	0.005											0.002	0.002					
1,1,1-Trichloroethane	0.20 (MCL)	0.004	0.011									0.004								1.4
Trichloroethene	0.005 (MCL)																			1.5
Vinyl Chloride	0.002 (MCL)																			
Total Chlorinated VOCs	NA	0.008	0.020						0.002	0.002		0.031		0.002	0.005					5.09
Acetone	0.70 (BHRA)																			
2-Butanone (MEK)	0.17 (LHA)																			
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)																			0.1

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		SH-5 DUP. (OW-3)	SH-6	SH-7	SH-8					SH-9					SH-10	SH-10 DUP. (OW-4)
VOC Dilution Factor		10	10	1	1					1					10	10
Date of Sample		6/19/95	6/22/95	6/21/95	6/16/95	12/18/95	4/3/96	8/13/96	11/5/96	6/15/95	12/15/95	4/2/96	8/12/96	11/4/96	6/22/95	6/22/95
Compounds	AGQS															
Benzene	0.005 (MCL)	0.16	0.78	0.004											0.01	0.01
n-Butylbenzene	NA							0.001								
sec-Butylbenzene	NA															0.02
Ethylbenzene	0.70 (MCL)	0.11	0.46	0.036											1.3	0.85
Isopropylbenzene	NA	0.01	0.02	0.003				0.002							0.08	0.03
p-Isopropyltoluene	NA			0.001											0.08	0.02
Naphthalene	0.020 (LHA)	0.09	0.10	0.038			0.002	0.035	0.002						0.46	0.25
n-Propylbenzene	NA	0.03	0.04	0.009				0.003							0.19	0.07
Toluene	1.0 (MCL)	1.4	1.2	0.055											0.66	0.57
1,2,4-Trimethylbenzene	NA	0.25	0.31	0.086			0.003	0.052	0.003						1.7	0.72
1,3,5-Trimethylbenzene	NA	0.07	0.12	0.027											0.76	0.26
o-Xylene	10.0* (MCL)	0.21	0.39	0.077			0.001	0.017							0.94	0.64
m,p-Xylene	10.0* (MCL)	0.38	1.0	0.10											2.6	1.7
MTBE	0.10 (BHRA)															
Total Non-Chlorinated Aromatic VOCs + MTBE	NA	2.71	4.42	0.436			0.006	0.110	0.005						8.78	5.14
Chloroethane	NA		0.20													
Chloroform	0.006** (EPA 10-6)															
1,2-Dichlorobenzene	0.60 (MCL)	0.01	0.02	0.007				0.004							0.03	0.02
1,4-Dichlorobenzene	0.075 (MCL)							0.001								
1,1-Dichloroethane	0.081 (BHRA)	0.04	3.0	0.009	0.009	0.006	0.002	0.014	0.004	0.005		0.004				
1,2-Dichloroethane	0.005 (MCL)	0.02										0.003				
1,1-Dichloroethene	0.007 (MCL)	0.04	0.02													
cis-1,2-Dichloroethene	0.070 (MCL)	2.2	1.3	0.038	0.005	0.002		0.004		0.008	0.003	0.027	0.005	0.009	0.03	0.03
trans-1,2-Dichloroethene	0.10 (MCL)		0.11													
Tetrachloroethene	0.005 (MCL)					0.004		0.004		0.016	0.019	0.016	0.013	0.008	0.03	0.02
1,1,1-Trichloroethane	0.20 (MCL)	1.8	0.31	0.038	0.044	0.036	0.013	0.041	0.018	0.010		0.034	0.006	0.006	0.22	0.22
Trichloroethene	0.005 (MCL)	2.0			0.024	0.019	0.007	0.048	0.010	0.002		0.019		0.002		
Vinyl Chloride	0.002 (MCL)		2.2													
Total Chlorinated VOCs	NA	6.11	7.16	0.092	0.082	0.067	0.022	0.116	0.032	0.041	0.022	0.103	0.024	0.025	0.31	0.29
Acetone	0.70 (BHRA)															
2-Butanone (MEK)	0.17 (LHA)			0.01												
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)															

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		SH-11					SH-12					AE-1					AE-1 DUP (OW-2)
VOC Dilution Factor		1					1					1					1
Date of Sample		6/15/95	12/15/95	4/2/96	8/12/96	11/4/96	6/14/95	12/18/95	4/3/96	8/13/96	11/5/96	6/14/95	12/18/95	4/3/96	8/13/96	11/4/96	11/4/96
Compounds	AGQS																
Benzene	0.005 (MCL)																
n-Butylbenzene	NA														0.002		
sec-Butylbenzene	NA												0.002	0.003	0.004		
Ethylbenzene	0.70 (MCL)											0.011	0.014	0.023	0.019	0.004	0.004
Isopropylbenzene	NA											0.004	0.005	0.009	0.008	0.001	0.001
p-Isopropyltoluene	NA												0.004		0.010		
Naphthalene	0.020 (LHA)											0.010	0.016	0.032	0.029	0.004	0.004
n-Propylbenzene	NA											0.006	0.009	0.013	0.014	0.001	0.002
Toluene	1.0 (MCL)								0.001								
1,2,4-Trimethylbenzene	NA											0.005	0.052	0.03	0.006	0.010	0.009
1,3,5-Trimethylbenzene	NA											0.011	0.017	0.028	0.019	0.004	0.004
o-Xylene	10.0* (MCL)											0.003	0.04	0.023	0.001	0.007	0.006
m,p-Xylene	10.0* (MCL)								0.001			0.011	0.015	0.024	0.012	0.005	0.004
MTBE	0.10 (BHRA)											0.21	0.11	0.04	0.030	0.04	0.07
Total Non-Chlorinated Aromatic VOCs + MTBE	NA								0.002			0.271	0.284	0.225	0.154	0.076	0.104
Chloroethane	NA																
Chloroform	0.006** (EPA 10-6)																
1,2-Dichlorobenzene	0.60 (MCL)																
1,4-Dichlorobenzene	0.075 (MCL)																
1,1-Dichloroethane	0.081 (BHRA)																
1,2-Dichloroethane	0.005 (MCL)																
1,1-Dichloroethene	0.007 (MCL)																
cis-1,2-Dichloroethene	0.070 (MCL)																
trans-1,2-Dichloroethene	0.10 (MCL)																
Tetrachloroethene	0.005 (MCL)																
1,1,1-Trichloroethane	0.20 (MCL)																
Trichloroethene	0.005 (MCL)																
Vinyl Chloride	0.002 (MCL)																
Total Chlorinated VOCs	NA																
Acetone	0.70 (BHRA)															0.11	0.08
2-Butanone (MEK)	0.17 (LHA)															0.01	
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)																

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		AE-2					AE-3		AE-4				AE-5			AE-8	AE-9	AE-9B
VOC Dilution Factor		1					1	10	10		1	10	10		1	10	10	10
Date of Sample		6/14/95	12/18/95	4/3/96	8/13/96	11/4/96	6/22/95	4/3/96	6/20/95	12/18/95	4/3/96	8/13/96	6/20/95	8/14/96	11/5/96	6/22/95	6/22/95	6/22/95
Compounds	AGQS																	
Benzene	0.005 (MCL)						0.026			0.01	0.014		0.06	0.04	0.062	0.04	0.07	0.15
n-Butylbenzene	NA				0.007							0.03						
sec-Butylbenzene	NA		0.008		0.008	0.004	0.010	0.02	0.10	0.02		0.01			0.001			0.01
Ethylbenzene	0.70 (MCL)	0.084	0.045	0.079	0.078	0.040	0.10	0.08	0.11	0.07	0.058	0.09	0.16	0.08	0.023	0.02	0.13	0.31
Isopropylbenzene	NA	0.020	0.018	0.021	0.021	0.011	0.020	0.02	0.05	0.02	0.013	0.03	0.01					0.02
p-Isopropyltoluene	NA				0.011	0.006	0.010		0.10	0.04	0.018	0.01			0.004			
Naphthalene	0.020 (LHA)	0.091	0.057	0.098	0.130	0.073	0.22	0.26	0.28	0.15	0.074	0.17	0.19	0.20		0.02	0.08	0.23
n-Propylbenzene	NA	0.033	0.026	0.033	0.035	0.019	0.020	0.04	0.11	0.03	0.021	0.04	0.03				0.02	0.06
Toluene	1.0 (MCL)			0.001			0.13	0.1	0.01		0.007		0.56	0.44	0.380	0.13	0.76	1.5
1,2,4-Trimethylbenzene	NA	0.19	0.15	0.19	0.190	0.100	0.35	0.43	0.86	0.21	0.22	0.16	0.26	0.22	0.093	0.05	0.17	0.45
1,3,5-Trimethylbenzene	NA	0.025	0.008	0.006		0.042	0.10	0.13	0.36	0.08	0.092	0.07	0.08	0.06	0.043	0.02	0.05	0.12
o-Xylene	10.0* (MCL)	0.16	0.077	0.16	0.140	0.089	0.17	0.21	0.21	0.09	0.14	0.05	0.25	0.23	0.170	0.06	0.20	0.46
m,p-Xylene	10.0* (MCL)	0.064	0.009	0.028	0.011	0.010	0.33	0.29	0.25	0.12	0.15	0.11	0.52	0.37	0.210	0.10	0.43	1.0
MTBE	0.10 (BHRA)																	
Total Non-Chlorinated Aromatic VOCs + MTBE	NA	0.667	0.398	0.616	0.631	0.394	1.486	1.58	2.44	0.84	0.807	0.77	2.12	1.64	0.986	0.44	1.91	4.31
Chloroethane	NA														0.010			
Chloroform	0.006** (EPA 10-6)																	
1,2-Dichlorobenzene	0.60 (MCL)						0.001						0.02	0.02	0.010			0.02
1,4-Dichlorobenzene	0.075 (MCL)														0.001			
1,1-Dichloroethane	0.081 (BHRA)												0.07		0.210	0.44	0.22	0.18
1,2-Dichloroethane	0.005 (MCL)														0.010	0.03		
1,1-Dichloroethene	0.007 (MCL)																	
cis-1,2-Dichloroethene	0.070 (MCL)						0.002				0.002		0.04	0.02	0.240	0.49	0.18	0.54
trans-1,2-Dichloroethene	0.10 (MCL)														0.005			
Tetrachloroethene	0.005 (MCL)																	
1,1,1-Trichloroethane	0.20 (MCL)												0.07	0.04	0.110	0.07	0.36	0.75
Trichloroethene	0.005 (MCL)																	
Vinyl Chloride	0.002 (MCL)												0.13		0.024			
Total Chlorinated VOCs	NA						0.003				0.002		0.33	0.08	0.620	1.03	0.76	1.49
Acetone	0.70 (BHRA)														0.20			
2-Butanone (MEK)	0.17 (LHA)														0.02			
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)														0.02			

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		AE-10			AE-10 DUP (OW-1)	AE-11D					AE-11D DUP (OW-1)	AE-12				
VOC Dilution Factor		1			1	1					1	1				
Date of Sample		6/14/95	12/18/95	4/2/96	4/3/96	6/16/95	12/15/95	4/3/96	8/14/96	11/4/96	11/4/96	6/14/95	12/18/95	4/2/96	8/12/96	11/4/96
Compounds	AGQS															
Benzene	0.005 (MCL)					0.005		0.003		0.009	0.009	0.004			0.001	0.001
n-Butylbenzene	NA															
sec-Butylbenzene	NA											0.002				
Ethylbenzene	0.70 (MCL)					0.001		0.001		0.004	0.004	0.068		0.001	0.030	0.006
Isopropylbenzene	NA											0.008			0.003	
p-Isopropyltoluene	NA														0.001	
Naphthalene	0.020 (LHA)					0.002		0.002		0.004	0.004	0.053			0.015	
n-Propylbenzene	NA											0.021				
Toluene	1.0 (MCL)					0.017		0.005		0.037	0.039	0.005				
1,2,4-Trimethylbenzene	NA					0.004		0.003		0.005	0.006	0.16		0.004	0.056	0.001
1,3,5-Trimethylbenzene	NA					0.002				0.001		0.045			0.016	
o-Xylene	10.0* (MCL)					0.008		0.003		0.007	0.008	0.12		0.003	0.060	0.015
m,p-Xylene	10.0* (MCL)					0.008		0.003		0.011	0.012	0.081		0.002	0.035	0.010
MTBE	0.10 (BHRA)															
Total Non-Chlorinated Aromatic VOCs + MTBE	NA					0.047		0.02		0.078	0.082	0.567		0.010	0.217	0.033
Chloroethane	NA															
Chloroform	0.006** (EPA 10-6)											0.002	0.002			0.003
1,2-Dichlorobenzene	0.60 (MCL)															
1,4-Dichlorobenzene	0.075 (MCL)															
1,1-Dichloroethane	0.081 (BHRA)					0.005		0.003		0.005	0.005	0.063	0.029	0.024	0.017	0.055
1,2-Dichloroethane	0.005 (MCL)					0.004						0.002				
1,1-Dichloroethene	0.007 (MCL)									0.004						
cis-1,2-Dichloroethene	0.070 (MCL)					0.29	0.004	0.15	0.008	0.270	0.290	0.16	0.003	0.006	0.022	0.037
trans-1,2-Dichloroethene	0.10 (MCL)															
Tetrachloroethene	0.005 (MCL)											0.021	0.047	0.016	0.020	0.025
1,1,1-Trichloroethane	0.20 (MCL)					0.089		0.032	0.006	0.085	0.096	0.075	0.026	0.021	0.029	0.034
Trichloroethene	0.005 (MCL)					0.003			0.003	0.019	0.020	0.010			0.007	
Vinyl Chloride	0.002 (MCL)															
Total Chlorinated VOCs	NA					0.391	0.004	0.185	0.017	0.383	0.411	0.333	0.107	0.067	0.095	0.154
Acetone	0.70 (BHRA)															
2-Butanone (MEK)	0.17 (LHA)															
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)															

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		AE-14					AE-16	AE-17S					AE-17D				
VOC Dilution Factor		1					10	1					10		1		
Date of Sample		6/16/95	12/15/95	4/3/96	8/12/96	11/5/96	6/22/95	6/15/95	12/15/95	4/2/96	8/12/96	11/4/96	6/15/95	12/15/95	4/2/96	8/12/96	11/4/96
Compounds	AGQS																
Benzene	0.005 (MCL)						0.05						0.04	0.06	0.05	0.007	0.017
n-Butylbenzene	NA																
sec-Butylbenzene	NA																
Ethylbenzene	0.70 (MCL)			0.003			0.09										
Isopropylbenzene	NA			0.002													
p-Isopropyltoluene	NA																
Naphthalene	0.020 (LHA)			0.013			0.07							0.06		0.008	0.012
n-Propylbenzene	NA			0.001			0.01										
Toluene	1.0 (MCL)						0.12										
1,2,4-Trimethylbenzene	NA			0.016			0.14						0.07	0.10	0.07	0.011	0.015
1,3,5-Trimethylbenzene	NA			0.001			0.04							0.05			0.007
o-Xylene	10.0* (MCL)			0.032			0.13						0.06	0.09	0.06	0.010	0.015
m,p-Xylene	10.0* (MCL)						0.21										
MTBE	0.10 (BHRA)																
Total Non-Chlorinated Aromatic VOCs + MTBE	NA			0.068			0.86						0.17	0.36	0.18	0.036	0.066
Chloroethane	NA						0.54										
Chloroform	0.006** (EPA 10-6)																
1,2-Dichlorobenzene	0.60 (MCL)						0.01										
1,4-Dichlorobenzene	0.075 (MCL)					0.001											
1,1-Dichloroethane	0.081 (BHRA)			0.003			0.34						0.02		0.02	0.009	0.009
1,2-Dichloroethane	0.005 (MCL)															0.006	0.005
1,1-Dichloroethene	0.007 (MCL)														0.01		0.004
cis-1,2-Dichloroethene	0.070 (MCL)	0.013	0.014	0.028	0.010								0.65	0.80	0.78	0.35	0.360
trans-1,2-Dichloroethene	0.10 (MCL)																
Tetrachloroethene	0.005 (MCL)	0.009	0.01	0.013	0.009	0.011										0.004	0.003
1,1,1-Trichloroethane	0.20 (MCL)	0.011	0.005	0.011	0.005								0.12	0.15	0.15	0.070	0.070
Trichloroethene	0.005 (MCL)	0.006	0.005	0.011	0.003								0.02	0.02	0.02	0.011	0.011
Vinyl Chloride	0.002 (MCL)																
Total Chlorinated VOCs	NA	0.039	0.034	0.066	0.027	0.012	0.89						0.81	0.97	0.98	0.450	0.462
Acetone	0.70 (BHRA)																
2-Butanone (MEK)	0.17 (LHA)																
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)																

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		AE-18S					AE-18D					AE-20			AE-21			AE-22		
VOC Dilution Factor		10					1					1			1			1		
Date of Sample		6/15/95	12/15/95	4/2/96	8/12/96	11/4/96	6/15/95	12/15/95	4/2/96	8/12/96	11/4/96	6/14/95	12/18/95	4/2/96	6/16/95	12/15/95	4/3/96	6/16/95	12/15/95	4/3/96
Compounds	AGQS																			
Benzene	0.005 (MCL)	0.01	0.07	0.12	0.03	0.01														
n-Butylbenzene	NA																			
sec-Butylbenzene	NA																			
Ethylbenzene	0.70 (MCL)		0.06	0.07	0.02	0.01														
Isopropylbenzene	NA																			
p-Isopropyltoluene	NA																			
Naphthalene	0.020 (LHA)		0.03	0.1	0.01															
n-Propylbenzene	NA																			
Toluene	1.0 (MCL)		0.04	0.05																
1,2,4-Trimethylbenzene	NA	0.01	0.05	0.07		0.01	0.001													
1,3,5-Trimethylbenzene	NA			0.01																
o-Xylene	10.0* (MCL)	0.01	0.06	0.07	0.04	0.03														
m,p-Xylene	10.0* (MCL)		0.03	0.05	0.01															
MTBE	0.10 (BHRA)																			
Total Non-Chlorinated Aromatic VOCs + MTBE	NA	0.03	0.34	0.54	0.11	0.06	0.001													
Chloroethane	NA																			
Chloroform	0.006** (EPA 10-6)																			
1,2-Dichlorobenzene	0.60 (MCL)																			
1,4-Dichlorobenzene	0.075 (MCL)																			
1,1-Dichloroethane	0.081 (BHRA)	0.07	0.25	0.21	0.06	0.03	0.002													
1,2-Dichloroethane	0.005 (MCL)																			
1,1-Dichloroethene	0.007 (MCL)																			
cis-1,2-Dichloroethene	0.070 (MCL)	0.78	1.4	1.5	0.68	0.58	0.004			0.006	0.011									
trans-1,2-Dichloroethene	0.10 (MCL)	0.04	0.05	0.07	0.02															
Tetrachloroethene	0.005 (MCL)																			
1,1,1-Trichloroethane	0.20 (MCL)	0.15	0.21	0.22	0.18	0.13														
Trichloroethene	0.005 (MCL)				0.02	0.04														
Vinyl Chloride	0.002 (MCL)	0.11	0.50	0.80		0.04					0.004									
Total Chlorinated VOCs	NA	1.15	2.41	2.8	0.96	0.82	0.006			0.006	0.015									
Acetone	0.70 (BHRA)																			
2-Butanone (MEK)	0.17 (LHA)																			
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)																			

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		MW-4			MW-4 DUP (OW-2)	RFW-1			RFW-2			On-Site Dug Well				HM				HM DUP (OW-4)
VOC Dilution Factor		1			1	1			1			1				1				1
Date of Sample		6/14/95	12/18/95	4/3/96	12/18/95	4/3/96	8/13/96	11/5/96	4/3/96	8/13/96	11/5/96	12/14/95	4/3/96	8/12/96	11/5/96	12/18/95	4/3/96	8/14/96	11/6/96	8/14/96
Compounds	AGQS																			
Benzene	0.005 (MCL)											0.042	0.001	0.014						
n-Butylbenzene	NA																			
sec-Butylbenzene	NA							0.001												
Ethylbenzene	0.70 (MCL)							0.003												
Isopropylbenzene	NA							0.002				0.002								
p-Isopropyltoluene	NA					0.002														
Naphthalene	0.020 (LHA)					0.01		0.017				0.008		0.002						
n-Propylbenzene	NA					0.002		0.003												
Toluene	1.0 (MCL)													0.002						
1,2,4-Trimethylbenzene	NA					0.023		0.030												
1,3,5-Trimethylbenzene	NA					0.008		0.009												
o-Xylene	10.0* (MCL)					0.002		0.009				0.004		0.002						
m,p-Xylene	10.0* (MCL)					0.002		0.006												
MTBE	0.10 (BHRA)					0.57			0.12	0.06										
Total Non-Chlorinated Aromatic VOCs + MTBE	NA					0.619		0.080	0.12	0.06		0.056	0.001	0.020						
Chloroethane	NA											0.05		0.020						
Chloroform	0.006** (EPA 10-6)																			
1,2-Dichlorobenzene	0.60 (MCL)											0.002								
1,4-Dichlorobenzene	0.075 (MCL)																			
1,1-Dichloroethane	0.081 (BHRA)								0.002			0.19	0.037	0.068	0.020					
1,2-Dichloroethane	0.005 (MCL)											0.005		0.002						
1,1-Dichloroethene	0.007 (MCL)																			
cis-1,2-Dichloroethene	0.070 (MCL)											0.40	0.033	0.190	0.022		0.002			
trans-1,2-Dichloroethene	0.10 (MCL)											0.02	0.002	0.011						
Tetrachloroethene	0.005 (MCL)																			
1,1,1-Trichloroethane	0.20 (MCL)											0.05	0.005	0.033	0.004					
Trichloroethene	0.005 (MCL)																			
Vinyl Chloride	0.002 (MCL)											0.14			0.002					
Total Chlorinated VOCs	NA								0.002			0.857	0.077	0.324	0.048		0.002			
Acetone	0.70 (BHRA)																			
2-Butanone (MEK)	0.17 (LHA)																			
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)																			

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location		HR				OW-1 (see note 11)		OW-2 (see note 11)		OW-3 (see note 11)	OW-4 (see note 11)
VOC Dilution Factor		1				1		1		1	1
Date of Sample		12/18/95	4/3/96	8/14/96	11/6/96	6/19/95	12/15/95	6/16/95	4/3/96	8/14/96	11/5/96
Compounds	AGQS										
Benzene	0.005 (MCL)										
n-Butylbenzene	NA										
sec-Butylbenzene	NA										
Ethylbenzene	0.70 (MCL)										
Isopropylbenzene	NA										
p-Isopropyltoluene	NA										
Naphthalene	0.020 (LHA)										
n-Propylbenzene	NA										
Toluene	1.0 (MCL)										
1,2,4-Trimethylbenzene	NA										
1,3,5-Trimethylbenzene	NA										
o-Xylene	10.0* (MCL)										
m,p-Xylene	10.0* (MCL)										
MTBE	0.10 (BHRA)										
Total Non-Chlorinated Aromatic VOCs + MTBE	NA										
Chloroethane	NA										
Chloroform	0.006** (EPA 10-6)										
1,2-Dichlorobenzene	0.60 (MCL)										
1,4-Dichlorobenzene	0.075 (MCL)										
1,1-Dichloroethane	0.081 (BHRA)		0.004	0.003							
1,2-Dichloroethane	0.005 (MCL)										
1,1-Dichloroethene	0.007 (MCL)										
cis-1,2-Dichloroethene	0.070 (MCL)	0.023	0.045	0.004	0.012						
trans-1,2-Dichloroethene	0.10 (MCL)										
Tetrachloroethene	0.005 (MCL)	0.015	0.006	0.004	0.004						
1,1,1-Trichloroethane	0.20 (MCL)	0.007	0.017	0.006	0.005						
Trichloroethene	0.005 (MCL)	0.006	0.008		0.002						
Vinyl Chloride	0.002 (MCL)										
Total Chlorinated VOCs	NA	0.051	0.08	0.017	0.023						
Acetone	0.70 (BHRA)										
2-Butanone (MEK)	0.17 (LHA)										
4-Methyl-2-pentanone (MIBK)	0.35 (BHRA)										

TABLE 3
Summary of VOC Data (mg/l) for Groundwater Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Notes:

1. Samples were collected by SHA on the dates indicated. Monitoring wells with measurable levels of floating product (>0.01 ft) were not sampled in monitoring rounds subsequent to June 1995. Monitoring wells historically exhibiting no VOCs and considered upgradient of known or suspected source areas were not sampled in August or November 1996. Results of analyses completed on samples collected in the November 1996 round are shaded.
2. Analyses for VOCs were completed by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire, using EPA Method 8260.
3. Concentrations are presented in milligrams per liter (mg/l) which are equivalent to parts per million (ppm).
4. A blank indicates the compound was not detected. Only those VOCs detected in one or more groundwater samples are listed.
5. Standard detection limits for VOCs are 0.001 to 0.05 mg/l, depending on the compound. Detection limits are elevated by a factor proportional to the dilution factor in samples with elevated VOC concentrations. Refer to the analytical laboratory data reports for specific detection limits.
6. Methyl tertiary butyl ether (MTBE) is included with the total concentration of non-chlorinated aromatic VOCs.
7. Ambient Groundwater Quality Standards (AGQS) are from New Hampshire Code of Administrative Rules Env-Ws 410 (2/11/93). The sources of the AGQSs include:
 - Maximum Contaminant Level (MCL) established by the United States Environmental Protection Agency (USEPA);
 - Lifetime Health Advisory (LHA) established by the USEPA;
 - Health Advisory Level established by the New Hampshire Department of Health and Human Services, Division of Public Health Services, Bureau of Health Risk Assessment (BHRA);
 - USEPA 10⁻⁶ carcinogenic risk level (EPA 10⁻⁶); and
 - "NA" indicates no AGQS established by NHDES
8. "*" indicates AGQS is for total xylenes (o, m, and p).
9. "***" indicates AGQS is for total trihalomethanes (THMs).
10. VOC concentrations in groundwater which equal or exceed the AGQSs are in ***bold italics***.
11. "HM" - Howard Manor overburden well.
 "HR" - Howard Residence overburden well.
 "OW-1" - Trip blanks provided by EAI in June and December 1995.
 "OW-2" - Equipment blank analyzed in June 1995, and trip blank provided by EAI in April 1996.
 "OW-3" - Trip blank provided by EAI in August 1996.
 "OW-4" - Trip blank provided by EAI in November 1996.

TABLE 4
Summary of VOC Data (ppm) for Surface Water and Sediment Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location	SW-1					SW-1 DUP (OW-2)	SW-1 DUP (OW-3)	SS-1	SW-2				SS-2
VOC Dilution Factor	1					1	1	1	1				1
Date of Sample	6/20/95	12/19/95	4/2/96	8/14/96	11/6/96	8/14/96	11/6/96	6/20/95	6/20/95	12/19/95	4/2/96	11/6/96	6/20/95
Benzene										0.002	0.002		
sec-Butylbenzene									0.002				0.02
Ethylbenzene										0.009		0.003	
Isopropylbenzene										0.002			
p-Isopropyltoluene										0.002			
Naphthalene									0.001	0.009	0.002	0.003	
n-Propylbenzene									0.001	0.003		0.001	
Toluene									0.005	0.004	0.003	0.001	0.01
1,2,4-Trimethylbenzene										0.018	0.003	0.006	
1,3,5-Trimethylbenzene										0.012		0.001	
o-Xylene										0.011	0.004	0.005	
m,p-Xylene										0.012	0.004	0.004	
MTBE													
Total Non-Chlorinated Aromatic VOCs + MTBE									0.009	0.084	0.018	0.024	0.03
Chlorobenzene													
Chloroethane													
1,2-Dichlorobenzene										0.005			
1,4-Dichlorobenzene										0.002			
1,1-Dichloroethane										0.006		0.004	
1,2-Dichloroethane													
cis-1,2-Dichloroethene													
trans-1,2-Dichloroethene													
1,1,1-Trichloroethane													
Vinyl Chloride													
Total Chlorinated VOCs										0.013		0.004	
C ₁₁ -C ₁₆ VPHCs	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	5
2-Butanone (MEK)									0.02				

TABLE 4
Summary of VOC Data (ppm) for Surface Water and Sediment Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location	SW-3	SW-4					SS-4	SW-5					SS-5
VOC Dilution Factor	1	1					1	1					1
Date of Sample	8/14/96	6/20/95	12/19/95	4/2/96	8/14/96	11/6/96	6/20/95	6/20/95	12/19/95	4/2/96	8/14/96	11/6/96	6/20/95
Benzene		0.008		0.002	0.003	0.088							
sec-Butylbenzene							0.01						
Ethylbenzene		0.010		0.001		0.04	0.03						
Isopropylbenzene		0.001				0.002	0.01						
p-Isopropyltoluene													
Naphthalene		0.003		0.001		0.025	0.04						
n-Propylbenzene		0.002				0.001	0.02						
Toluene		0.001		0.004		0.11							
1,2,4-Trimethylbenzene		0.004		0.001		0.038							
1,3,5-Trimethylbenzene						0.01							
o-Xylene		0.005		0.002	0.001	0.074							
m,p-Xylene		0.004		0.002		0.075							
MTBE	0.05										0.03		
Total Non-Chlorinated Aromatic VOCs + MTBE	0.05	0.038		0.013	0.004	0.463	0.11				0.03		
Chlorobenzene		0.060											
Chloroethane						0.23							
1,2-Dichlorobenzene		0.002											
1,4-Dichlorobenzene													
1,1-Dichloroethane		0.007		0.004	0.018	0.02							
1,2-Dichloroethane						0.005	0.02						
cis-1,2-Dichloroethene				0.009	0.004	0.27							
trans-1,2-Dichloroethene						0.019							
1,1,1-Trichloroethane						0.031							
Vinyl Chloride						0.14							
Total Chlorinated VOCs		0.069		0.013	0.022	0.525	0.02						
C ₁₁ -C ₁₆ VPHCs	NA	NA	NA	NA	NA	NA	2	NA	NA	NA	NA	NA	ND
2-Butanone (MEK)													

TABLE 4
Summary of VOC Data (ppm) for Surface Water and Sediment Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Location	SW-6	SS-6	SW-7				SW-8					SS-8
VOC Dilution Factor	1	1	1				1					1
Date of Sample	6/21/95	6/21/95	12/18/95	4/2/96	8/14/96	11/5/96	6/21/95	12/18/95	4/3/96	8/14/96	11/6/96	6/21/95
Benzene												
sec-Butylbenzene												
Ethylbenzene												
Isopropylbenzene												
p-Isopropyltoluene												
Naphthalene												
n-Propylbenzene												
Toluene						0.002						
1,2,4-Trimethylbenzene												
1,3,5-Trimethylbenzene												
o-Xylene												
m,p-Xylene												
MTBE												
Total Non-Chlorinated Aromatic VOCs + MTBE						0.002						
Chlorobenzene												
Chloroethane												
1,2-Dichlorobenzene												
1,4-Dichlorobenzene												
1,1-Dichloroethane					0.002	0.004	0.002			0.003		
1,2-Dichloroethane												
cis-1,2-Dichloroethene				0.006	0.004	0.011	0.008	0.003		0.009	0.002	
trans-1,2-Dichloroethene												
1,1,1-Trichloroethane												
Vinyl Chloride						0.002						
Total Chlorinated VOCs				0.006	0.006	0.015	0.010	0.003		0.012	0.002	
C ₁₁ -C ₁₆ VPHCs	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
2-Butanone (MEK)												

TABLE 4
Summary of VOC Data (ppm) for Surface Water and Sediment Samples
Beede Waste Oil / Cash Energy Site
Plaistow, New Hampshire

Notes:

1. Samples were collected by SHA on the dates indicated. Results of samples collected in the November 1996 round are shaded.
2. Surface water location SW-3 was sampled in August 1996 because no surface water was observed at location SW-2.
3. Analyses were completed by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire using EPA Method 8260 (VOCs) and 8015 (VPHCs).
4. Concentrations are presented in milligrams per liter (mg/l) for surface water (SW-series) samples, and milligrams per kilogram (mg/kg) for sediment (SS-series) samples, both of which are equivalent to parts per million (ppm).
5. A blank indicates the compound was not detected. Only those VOCs detected in one or more samples are listed.
6. Refer to the analytical laboratory data reports for specific detection limits.
7. "NA" indicates not analyzed for specified parameter.

FIGURE

Figure 1 Exploration Location Plan

**The on-line Figure for this report is
provided as a separate Adobe Acrobat® file.**

APPENDICES

**Appendix A Groundwater and Surface Water Quality Field
Sampling Summaries**

Appendix B Analytical Laboratory Data Reports

**Appendices are not included in this on-line version.
Please contact the USEPA Region 1 Superfund Records Center for further
information about this material.**